

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-9 are pending in the application.

As a preliminary matter counsel notes that the examiner has not indicated acceptance of the 25 figures of drawings filed in this application. In the next communication acceptance (or not) of the drawings would be appreciated.

The outstanding Office Action asserted that Claims 1-9 are rejected under 35 USC §102 (b) as being anticipated by Kalbassi et al. (US 5,855,650). In particular, the outstanding Office Action asserted that Claims 1-9 are described on column 6, lines 59-67 and column 7, lines 1-14 of Kalbassi et al. as this passage of the reference is quoted in each of the four separate rejections, one for each independent claim.

Before discussing the deficiencies of the applied reference it is appropriate to review the requirements needed to establish anticipation. To anticipate a claim, a single reference must disclose the claimed invention with sufficient clarity to prove its existence in the prior art.

Motorola Inc. v. Interdigital Technology Corp., 43 USPQ2d 1481, 1490 (Fed. Cir. 1997).

Anticipation rejections are only proper when the "claimed subject matter is identically disclosed or described in 'the prior art,' without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." *In re Arkley*, 172 USPQ 524, 526 (CCPA 1972); *see also Akzo N.V. v. International Trade Commission*, 1 USPQ 2d 1241, 1246 (Fed. Cir. 1986); *Ex parte Lee*, 31 USPQ 2d 1105, 1108 (BPAI 1993). Every element of the challenged claim must be disclosed within this single reference. *PPG Industries Inc. v. Guardian Industries Corp.*, 37 USPQ2d 1618, 1624 (Fed. Cir. 1996). Absence from the reference of any claimed element negates anticipation *Kloster Speedsteel AB v. Crucible Inc.* 23 USPQ 160 (Fed. Cir. 1986).

Applicants submit that all of their claims are patentable over the cited reference as anticipation has not been established, as explained in the detailed remarks that follow.

The objects of the present invention are to quickly restart a temperature swing adsorption (TSA) apparatus and to prevent the increase in the concentrations of impurities in the purified air (i.e. breakthrough) after the restart of the TSA apparatus even when the TSA

apparatus is stopped urgently or according to a plan and the stop continues for a long time (*see* page 5, line 9 to page 7, line 12 of the present specification).

When a TSA apparatus that performed steady operation has been stopped for a long time, the impurities such as moisture and carbon dioxide are diffused in the adsorption column that performed the adsorption process even though the adsorption column has been kept in a sealed state. Therefore, there is a possibility that the impurities will break through the adsorption column after the restart of the TSA apparatus, and as a consequence the concentration of the impurities in the purified air can exceed the limit value.

In the adsorption column that performed the regeneration process, the heat introduced for the regeneration of adsorbents can be released outside due to heat transfer. Therefore, there is a possibility that regeneration of the adsorbents will become insufficient due to lack of heating.

In order to solve the aforementioned problems, “a self regeneration operation” that includes one or more of the respective adsorption process and regeneration process is conventionally performed before feeding purified air from the TSA apparatus to the air separation section. However, the self regeneration operation takes at least 4 hours in the TSA apparatus of a two column-alternating system because each of the adsorption process and regeneration process takes 2-4 hours. Therefore, there is a problem in that the restart of a cryogenic air separation plant is significantly delayed.

In the restart method of the present invention, the time point of stopping the TSA apparatus is separated into the 3 cases i), ii), and iii), and the appropriate sealing process and restart process of the TSA apparatus are performed in each of those 3 cases i), ii), and iii) (*see* Claims 1, 3, 6, and 8 of the present specification).

According to the present invention, it is possible to provide highly purified air even after the long-term stop without performing the self regeneration operation, and the time period from the restart of the TSA apparatus to the start of feeding a purified air to the cryogenic air separation plant is smaller than the time period required for the self regeneration operation (i.e. at least 4 hours). Therefore according to the process of the invention it is possible to quickly restart the TSA apparatus and to conduct a steady operation without causing the breakthrough.

In contrast, Kalbassi et al. do not disclose the aforementioned problems that occur in the long-term stoppage of the TSA apparatus. Column 6, lines 59-67 and column 7, lines 1-14 of

Kalbassi et al. disclose the transitional process from the regeneration process to the adsorption process. Please note that this transitional process is performed during the continuous operation. Kalbassi et al. do not disclose the sealing process and restart process, which are performed during the long-term stop of the TSA apparatus. In addition, Kalbassi et al. is silent regarding the advantageous effects thereof.

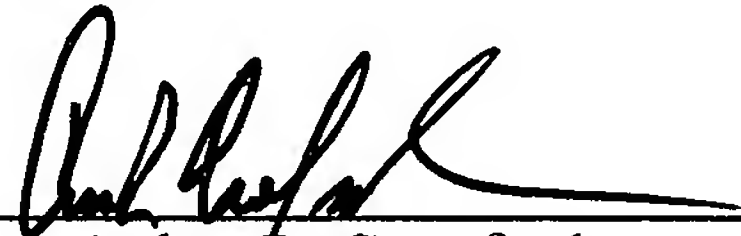
As explained above, Claims 1, 3, 6, and 8 each have technical features that are not anticipated by Kalbassi et al., are thus novel and should be allowable. The rejected Claims 2, 4, 5, 7, and 9 are dependent on the allowable Claims 1, 3, 6, or 8, and should also be allowable. *See* MPEP §2143.03 citing *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988).

For the above reasons it is respectfully submitted that the claims of this application define inventive subject matter. Reconsideration and allowance are solicited. Should the examiner require further information, please contact the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____


Arthur R. Crawford
Reg. No. 25,327

ARC:eaw
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100